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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/839,759	04/20/2001	Filippo Pironti	1085-2	1279

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EXAMINER

NGUYEN, TAM M

ART UNIT PAPER NUMBER

1764

DATE MAILED: 07/29/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/839,759

Applicant(s)

PIRONTI ET AL.

Examiner

Tam M. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 May 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 and 8-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 8-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Response to Amendment

The rejection of claims 1-5 and 7-15 under 35 USC § 112 is withdrawn by the examiner in view of the amendment filed on May 5, 2003.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-5 and 8-15 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The limitation "substantially condensed hydrocarbon feed stream" in claims 1, 4, 12, and 14 was not described in the specification in such a way as to reasonably convey to one skilled in the art at the time the application was filed that the inventors had possession of the claimed invention. It is reminded that paragraph 25 of the present specification only describes that vapor stream 19 is substantially condensed when it is passed through the cryogenic heat exchanger 223. In fact, paragraph 24 of the present specification describes that cooled feed streams 17 and 11, which are partially condensed, are fed to separator 205. Also, the limitation "cooling the hydrocarbon gas stream to provide a vapor hydrocarbon feed stream and a condensed liquid hydrocarbon stream" in lines 6-7 of claim 12 was not

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described in the specification in such a way as to reasonably convey to one skilled in the art at the time the application was filed that the inventors had possession of the claimed invention.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-5 and 8-15 are rejected under 35 U.S.C. 103(a) as being unpatentable by Shu et al. (6,125,653) in view of either Yao et al. (6,116,050) or Campbell et al. (5,568,737) or Foglietta (5,890,377).

Shu discloses a process for producing liquefied natural gas from a gas mixture comprising methane, ethane, and propane. The process includes steps of cooling the gas mixture which is then distilled in a demethanizer column to produce a methane-rich stream and an ethane/propane-rich stream. The methane rich stream is then compressed, cooled at a first temperature and pressure, and expanded by turbo expanders to provide a methane-cooling source for a cryogenic heat exchanger. After the expanding step, the methane rich stream has a second temperature and pressure that are lower than the first temperature and pressure. The ethane/propane rich stream is then passed into a de-ethanizer column to distill ethane from propane. (See entire document)

Shu does not specifically disclose that the gas mixture contains 50-75% by mole of methane, 15-40% by mole of ethane and 1-4 % by mole of propane. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the Shu process by using a feed gas having the claimed composition because Shu discloses that the feed gas for the process may comprise any gaseous mixture of hydrocarbons containing at least some methane. Therefore, one having ordinary skill in the art would employ any gas mixture including the claimed gas feed in the process of Shu and it would be expected that the results would be the same or similar when using the claimed feed gas in the process of Shu. (See col. 2, lines 22-25)

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Shu does not specifically disclose the percentage of purity of methane, ethane, and propane in recovery streams. However, the modified process of Shu is similar to the claimed process in term of feedstock, distilling, cooling, pressuring, and expanding. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Shu by operating the process under conditions to produce a stream of methane, ethane, and propane with the purity as claimed because one of ordinary skill in the art would determine to control and operate the distillation columns at effective conditions to arrive at the claimed purity if the claimed purity of methane, ethane, and propane is desirable.

Shu does not specifically disclose that the cooled feed is substantially condensed. However, the modified feed of Shu is similar to the claimed feed which is cooled to a very low temperature. Therefore, the modified process of Shu would provide a cooled feed, which is substantially condensed as claimed.

Shu does not specifically disclose that the feed is cooled by three sources as claimed. How Shu discloses that the vapor stream is subsequently cooled by methane, expansions and other cooling sources. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Shu by cooling the vapor stream with the three sources as claimed because Shu desires to cool the vapor stream to a very low temperature to remove methane from heavier hydrocarbons and it would be expected that the results would be the same or similar when using the claimed cooling sources in the Shu process because the cooling sources would not affect the outcomes of the process.

Response to arguments/Declaration

The argument that the Shu hydrocarbon feed, which is fed into the demethanizer column, is a substantially vapor hydrocarbon feed is noted. However, the argument is not persuasive because the modified feed of Shu is similar to the claimed feed. Therefore, it would be expected that the Shu hydrocarbon feed is substantially condensed after the cooling step as claimed.

The argument that the claimed process does not require propane and ethane refrigeration and does not require turbo-expansion is noted. However, the argument is not persuasive because the claimed process does not require propane and ethane refrigeration and does not require turbo-expansion.

The argument that it is not operable when using the claimed feed in the process of Shu because Shu's requirement that the cooled feed exiting the turbo-expander be at a temperature of -89°F cannot achieve is noted. However, the argument is not persuasive because Shu only **prefers** to cool the gas feed to a temperature of -89°F to separate methane from heavier hydrocarbons. Shu also discloses that the feed would contain $\text{C}_1\text{-C}_5$ hydrocarbons and the amount of the heavier hydrocarbons in the feed is not critical. Therefore, when heavy hydrocarbon feed is used in the process, one of skill in the art would operate the cooling step at a higher temperature because heavier hydrocarbons in a heavy feed can be separated from methane at higher temperature than -89°F .

The argument that without additional external refrigeration such as propane or ethane refrigeration the recovery system of Shu would not adequately operate is noted. However, the argument is not persuasive because Shu discloses that additional cooling sources (external or internal) might be added in any where in the process and the claimed process does not include that the process is operated without additional refrigeration.

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Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tam M. Nguyen whose telephone number is (703) 305-7715.

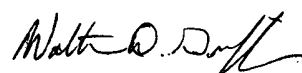
The examiner can normally be reached on Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 703-308-6824. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-5408 for regular communications and (703) 305-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Tam M. Nguyen
Examiner
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Tam Nguyen/ TN
July 23, 2003


Walter D. Griffin
Primary Examiner